3 Exponents, Logarithms, and Their Graphs

3.1 Exponential Functions

4/29/14

Complete yout Unit 3 pretest.

3.1 Exponential Functions

4/29/14

Define exponential growth, exponential decay, and compound interest.

Exponential growth - a quantity grows exponentially over time

$f(x) = 3^x$ $g(x) = 1.2^x$ $h(x) = \frac{9}{5}^x$

3, 9, 27, 81

> 1

Exponential decay - a quantity decays exponentially over time

$f(x) = 0.3^x$ $g(x) = .12^x$ $h(x) = \frac{5}{9}^x$

0.3, 0.09, 0.027, 0.0081

< 1

3.1 Exponential Functions

4/29/14

Define exponential growth, exponential decay, and compound interest.

Compound interest - the accrual of interest in an account when the interest gained also collects interest

Sam puts $300 in a savings account which pays 1.9% annually compounded monthly.

annually - 1 time/yr

monthly - 12 times/yr

weekly - 52 times/yr

daily - 365 times/yr

IWBAT identify the general formula for an exponential function, find the value of an account when given the initial investment amount, interest rate, compounding period, and time, and evaluate an exponential function for a given input value. I will capture my thinking using the math note catcher including teacher and student-team modeled example problems on the Promethean board. I will demonstrate my understanding on my exit ticket.

3.1 Exponential Functions

4/29/14

Identify the general formula for an exponential function.

$f(x) = a * b^x$

a = initial amount

b = growth factor

$f(x) = 2 * 3^x$

$a = 2$

$b = 3$

$f(x) = .5^x$

$a = 1$

$b = .5$

IWBAT identify the general formula for an exponential function, find the value of an account when given the initial investment amount, interest rate, compounding period, and time, and evaluate an exponential function for a given input value.

3.1 Exponential Functions 4/29/14

Evaluate an exponential function for a given input value.

Find f(3)

$f(x) = 3^x$ $f(3) = 3^3 = 27$

$f(x) = 2 * 3^x$ $f(3) = 2 \cdot 3^3 = 54$

$f(x) = 3 * .5^x$ $f(3) = 3 \cdot .5^3 = 3 \cdot \left(\frac{1}{2}\right)^3 = \frac{3}{1} \cdot \frac{1}{8} = \frac{3}{8}$

$f(x) = \frac{1}{3} \cdot 25^x$ $f(3) = \frac{1}{3} \cdot \left(\frac{1}{4}\right)^3 = \frac{1}{3} \cdot \frac{1}{64} = \frac{1}{192}$

IWBAT identify the general formula for an exponential function, find the value of an account when given the initial investment amount, interest rate, compounding period, and time, and evaluate an exponential function for a given input value.

3.1 Exponential Functions

4/29/14

Find the value of an account when given the initial investment amount, interest rate, compounding period, and time.

$$A(t) = P\left(1 + \frac{r}{n}\right)^{nt}$$

P = principal (initial amt.)

r = interest rate

t = time

n = number of compounding times in a year

$A(t)$ = amount after time t

IWBAT identify the general formula for an exponential function, find the value of an account when given the initial investment amount, interest rate, compounding period, and time, and evaluate an exponential function for a given input value.

3.1 Exponential Functions

4/29/14

Find the value of an account when given the initial investment amount, interest rate, compounding period, and time.

$$A(t) = P\left(1 + \frac{r}{n}\right)^{nt}$$

Sam puts $300 in a savings account which pays 1.9% compounded annually. How much is in his account after 3 years?

$$300\left(1 + \frac{0.019}{1}\right)^{3} = \$317.42$$

Sam puts $300 in a savings account which pays 1.9% annually compounded monthly. How much is in his account after 3 years?

$$300\left(1 + \frac{0.019}{12}\right)^{36} = \$317.58$$

IWBAT identify the general formula for an exponential function, find the value of an account when given the initial investment amount, interest rate, compounding period, and time, and evaluate an exponential function for a given input value.

3.1 Exponential Functions

4/29/14

Find the value of an account when given the initial investment amount, interest rate, compounding period, and time.

e is an irrational number. This means that its decimal representation goes on and on forever and does not repeat.

$e \approx 2.7182818284590\ldots$

e is approximated by $\left(1+\frac{1}{n}\right)^n$ for very large values of n

$e \sim 2.718$ 2nd Ln e^x

For continuous compounding:

$$A(t) = Pe^{rt}$$

IWBAT identify the general formula for an exponential function, find the value of an account when given the initial investment amount, interest rate, compounding period, and time, and evaluate an exponential function for a given input value.

3.1 Exponential Functions 4/29/14

Find the value of an account when given the initial investment amount, interest rate, compounding period, and time.

Sam puts $300 in a savings account which pays 1.9% annually compounded continually. How much is in his account after 3 years?

$$A(t) = Pe^{rt}$$

$300e^{(3 \cdot 0.019)} = \$317.59$

IWBAT identify the general formula for an exponential function, find the value of an account when given the initial investment amount, interest rate, compounding period, and time, and evaluate an exponential function for a given input value.

3.1 Exponential Functions

4/29/14

Vocabulary 3.1.1 p. 22

Practice 3.1.2

Apex quizzes 3.1.3 & 3.1.4

IWBAT identify the general formula for an exponential function, find the value of an account when given the initial investment amount, interest rate, compounding period, and time, and evaluate an exponential function for a given input value.

3.2 Examples of Applications of Exponential Functions

4/30/14

Evaluate an exponential function for a given input value.

Find $f(4)$.

$f(x) = .5 * 3^x$ $\quad f(4) = .5 \times 3^4 = .5 \cdot 81 = 40.5$

$f(x) = 12^x$ $\quad f(4) = 12^4 = 20,736$

$f\left(x\right) = 2 * \left(\frac{1}{3}\right)^x$ $\quad f(4) = 2 \cdot \left(\frac{1}{3}\right)^4 = 2 \cdot \frac{1}{81} = \frac{2}{81}$

3.2 Examples of Applications of Exponential Functions

$A(t) = P\left(1 + \frac{r}{n}\right)^{nt}$

4/30/14

Find the value of an account when given the initial investment amount, interest rate, compounding period, and time.

$400, 2.2%, compounded monthly, 5 years

P $r = 0.022$ $n = 12$ t

$$A(5) = 400\left(1 + \frac{0.022}{12}\right)^{12 \cdot 5} = \$409.26$$

$3,000 , 8.8% per day, 14 days

$$3000(1 + 0.088)^{14} = \$9770.70$$

$$0.026 = \$4297.18$$

3.2 Examples of Applications of Exponential Functions

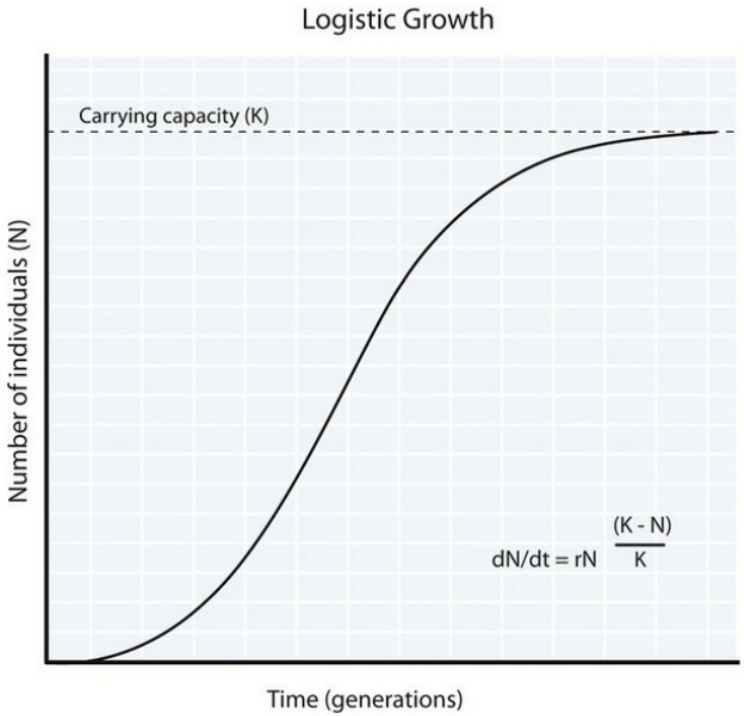
4/30/14

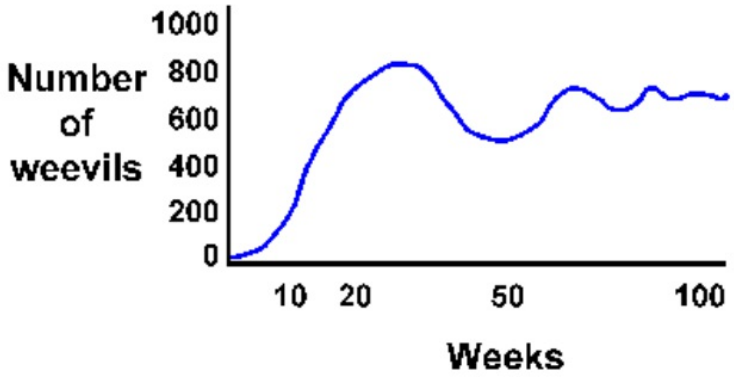
IWBAT define logistic growth and use exponential functions to solve real-world problems. I will capture my thinking using the math note catcher including teacher and student-team modeled example problems on the Promethean board. I will demonstrate my understanding on my exit ticket.

3.2 Examples of Applications of Exponential Functions

4/30/14

Logistic Growth: A type of growth that is exponential early, but slows as it reaches a maximum value.





IWBAT define logistic growth and use exponential functions to solve real-world problems.

3.2 Examples of Applications of Exponential Functions

4/30/14

Carbon Dating Problem
Apex 3.2.1, pp. 8-10

IWBAT define logistic growth and use exponential functions to solve real-world problems.

Find the value of an account when given the initial investment amount, interest rate, compounding period, and time.

$20,000 , 0.01%, monthly, 19 years

$$A(19) = 20{,}000\left(1 + \frac{.0001}{12}\right)^{(19 \cdot 12)} = \$20{,}038.03$$

$A(t) = Pe^{rt}$

$1200, 1.3%, continuously, 5 years

$$A(5) = 1200e^{(.013 \cdot 5)} = \$1280.59$$

Identify the y-intercept of an exponential function given in the form $F(x) = a*b^x$.

$x = 0$

$f(x) = 3^x$ $\quad f(0) = 3^0 = 1 \quad (0, 1)$

$f(x) = .9 * .5^x$ $\quad f(0) = .9 \cdot .5^0 = .9$

$f(x) = 12 * 0.01^x$ $\quad f(0) = 12 \cdot 0.01^0 = 12$

a = y-intercept

3.3 Graphs of Exponential Functions 5/01/14

IWBAT determine if an exponential function is an increasing or decreasing function when given its base; identify the domain, range, and y-intercept of exponential functions; and identify the exponential function that represents a given graph. I will capture my thinking using the math note catcher including teacher and student-team modeled example problems on the Promethean board. I will demonstrate my understanding on my exit ticket.

3.3 Graphs of Exponential Functions

5/01/14

Determine if an exponential function is an increasing or decreasing function when given its base.

$f(x) = 0.9 * 3^x$ $f(0) = 0.9$

$b > 1$ $f(1) = 2.7$

$f(x) = 3 * .5^x$ $f(0) = 3$

$f(1) = 1.5$

$0 < b < 1$

IWBAT determine if an exponential function is an increasing or decreasing function when given its base; identify the domain, range, and y-intercept of exponential functions; and identify the exponential function that represents a given graph.

3.3 Graphs of Exponential Functions

5/01/14

Identify the domain, range, and y-intercept of exponential functions.

$$f(x) = 3 * 3^x$$

y-intercept $(0, 3)$

Domain all Real numbers

Range $y > 0$

$f(3) = 3 \cdot 3^3$

$f(-3) = 3 \cdot 3^{-3} = 3 \cdot \frac{1}{3^3}$

$= 3 \cdot \frac{1}{27} = \frac{3}{27}$

IWBAT determine if an exponential function is an increasing or decreasing function when given its base; identify the domain, range, and y-intercept of exponential functions; and identify the exponential function that represents a given graph.

3.3 Graphs of Exponential Functions

5/01/14

Identify the domain, range, and y-intercept of exponential functions.

$$f(x) = 12 * 0.1^x$$

(0, 12)

D: all R #

R: $y > 0$

IWBAT determine if an exponential function is an increasing or decreasing function when given its base; identify the domain, range, and y-intercept of exponential functions; and identify the exponential function that represents a given graph.

3.3 Graphs of Exponential Functions 5/01/14

Identify the exponential function that represents a given graph.

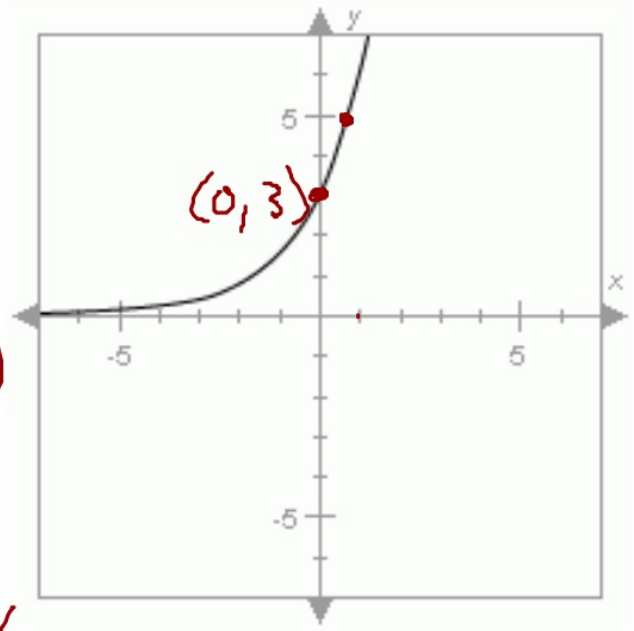
$y = ab^x$ $\quad b > 1$

$ab = 5$ $\quad a = 3$

$\frac{3b}{3} = \frac{5}{3}$ $\quad (1, 5)$

$(1, ab)$

$b = \frac{5}{3}$ $\quad (0, a)$



$y = 3 \cdot \left(\frac{5}{3}\right)^x$

IWBAT determine if an exponential function is an increasing or decreasing function when given its base; identify the domain, range, and y-intercept of exponential functions; and identify the exponential function that represents a given graph.

3.3 Graphs of Exponential Functions 5/01/14

Identify the exponential function that represents a given graph.

$0 < b < 1$

$a = 3$

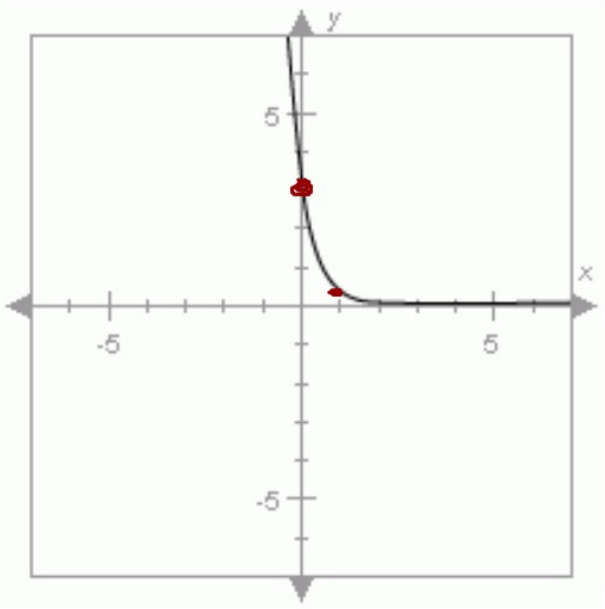
$(1, \frac{1}{3})$

$3b = \frac{1}{3}$

$b = \frac{\frac{1}{3}}{3}$

$b = \frac{1}{9}$

$y = 3 \cdot \left(\frac{1}{9}\right)^x$



IWBAT determine if an exponential function is an increasing or decreasing function when given its base; identify the domain, range, and y-intercept of exponential functions; and identify the exponential function that represents a given graph.

3.3 Graphs of Exponential Functions 5/01/14

Vocabulary 3.3.1 p. 13

Practice 3.3.2

Apex quiz 3.3.3

IWBAT determine if an exponential function is an increasing or decreasing function when given its base; identify the domain, range, and y-intercept of exponential functions; and identify the exponential function that represents a given graph.

Identify the domain, range, and y-intercept of exponential functions.

$f(x) = 4 * .8^x$ (0, 4)

D: all Real numbers

R: $y > 0$

$f(x) = .01 * 99^x$ (0, .01)

D: all Real numbers

R: $y > 0$

3.4 Logarithmic Functions

5/02/14

IWBAT convert exponential functions into common or natural logarithmic functions. I will capture my thinking using the math note catcher including teacher and student-team modeled example problems on the Promethean board. I will demonstrate my understanding on my exit ticket.

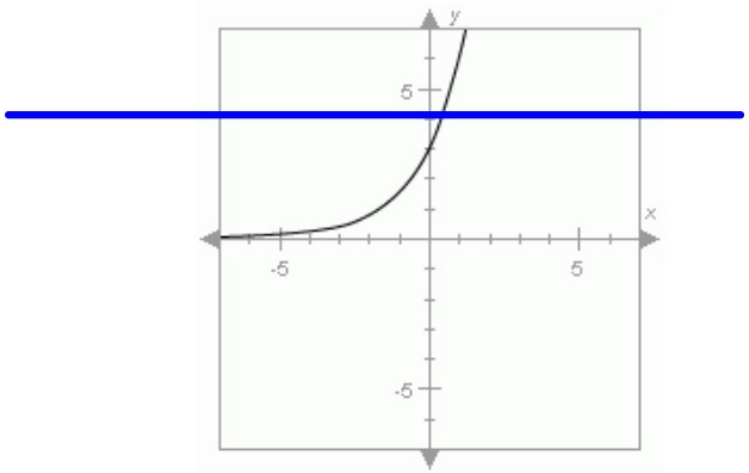
3.4 Logarithmic Functions

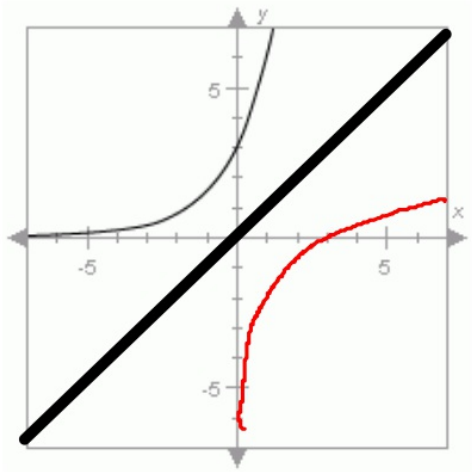
5/02/14

Logarithmic functions are the *inverse* of exponential functions.

Recall that inverses are flipped across the line $y = x$, and that all of the points of the original graph $(x\ ,\ y)$ become $(y\ ,\ x)$.

Exponentials are functions. Are logarithms functions? What test can we run to tell us?





Convert common and natural logarithmic functions into exponential functions.

$f(x) = b^x$ $\qquad$ $f^{-1}(y) = \log_b y$

$a = b^c$ $\qquad$ $c = \log_b a$

$10^x = 100$ $\qquad$ $\log_{10} 100 = x$

$10^{(2)} = 100$ $\qquad$ $x = 2$

$\log(10^x) = \log(100)$ $\qquad$ $x = \frac{\log 100}{\log 10}$

$x \frac{\log(10)}{\log 10} = \frac{\log(100)}{\log 10}$ $\qquad$ $x = \log_{10} 100$

Convert common and natural logarithmic functions into exponential functions.

common logarithm

$\log_{10} x = \log x$

natural logarithm

$y = \ln x \qquad x = e^y$

$e \approx 2.718$

Solve and rewrite in another form.

$\log_{10} 1000 = x$

$10^x = 1000$

$\log_{10} 1000 = 3$

$10^3 = 1000$

$\ln 1000 = x$

$e^x = 1000$

$\ln 1000 = 6.90$

Convert common and natural logarithmic functions into exponential functions.

$$a = b^c$$

$$\log_b a = c$$

$$\log(a^c) = c\log(a)$$

Change of base property

$$\log_b a = \frac{\log a}{\log b}$$

Vocabulary 3.4.1 p. 10

Practice 3.4.2

Apex quiz 3.4.3

Convert common and natural logarithmic functions into exponential functions.

3.5 Graphs of Logarithmic Functions

5/05/14

Convert exponential functions into common or natural logarithmic functions.

$f(x) = b^x$ $\qquad$ $f^{-1}(y) = \log_b y$

$24 = 3^{3x}$ $\qquad$ $3x = \log_3 24$

$181 = e^x$ $\qquad$ $x = \ln 181$

$63 = 5^x$ $\qquad$ $x = \log_5 63$

Evaluate the natural log function for a given input value.

Find $f(5)$.

$ln(3x) =$ $\ln(3 \cdot 5) = 1.17$

$ln\left(\frac{x}{5}\right) =$ $\ln(1) = 0$

$ln\left(\frac{3x}{5}\right) =$ $\ln(3) = 0.48$

IWBAT determine the values for which a logarithmic function increases or decreases, and identify the domain, range, x-intercept, and asymptote, and decide whether it decreases or increases given a logarithmic function. I will capture my thinking using the math note catcher including teacher and student-team modeled example problems on the Promethean board. I will demonstrate my understanding on my exit ticket.

Determine the values for which a logarithmic function increases or decreases.

$\log_2 x$ $\frac{\log(x)}{\log(2)}$ $ln_2 x$

increasing $x>0$ increasing $x>0$

$\log_8 x$ $ln_8 x$

increasing $x>0$ increasing $x>0$

$b>1$ incr.

$0<b<1$ decr.

$\log_{0.5} x$ $ln_{0.5} x$

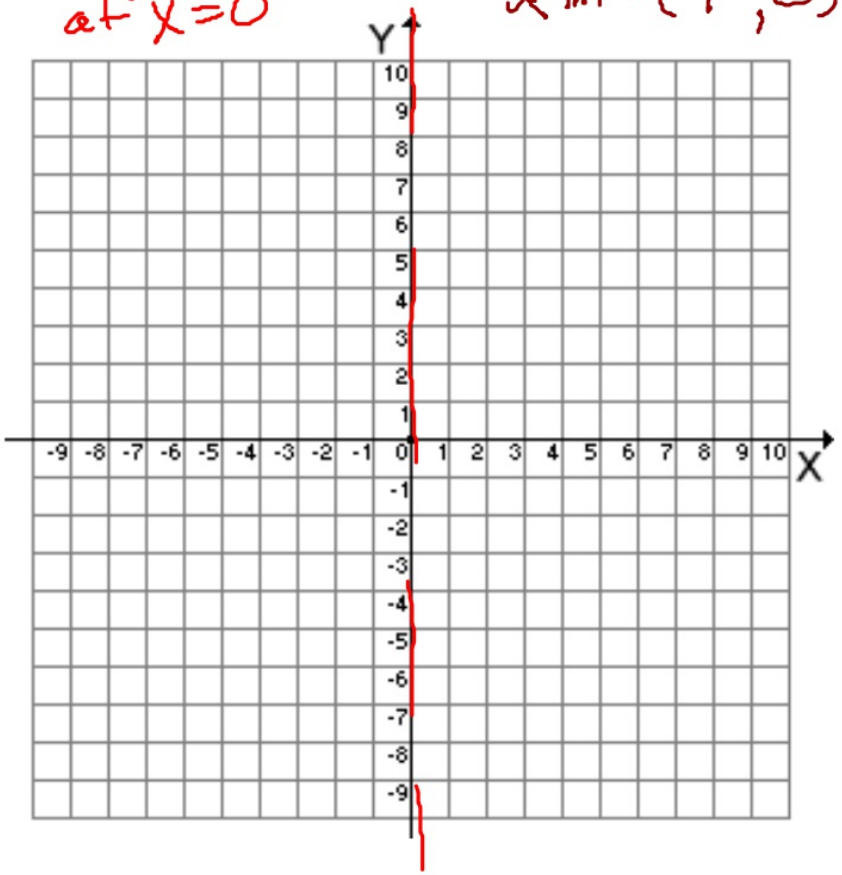
decreasing $x>0$ decreasing $x>0$

IWBAT determine the values for which a logarithmic function increases or decreases, and identify the domain, range, x-intercept, and asymptote, and decide whether it decreases or increases given a logarithmic function.

Identify the domain, range, x-intercept, and asymptote.

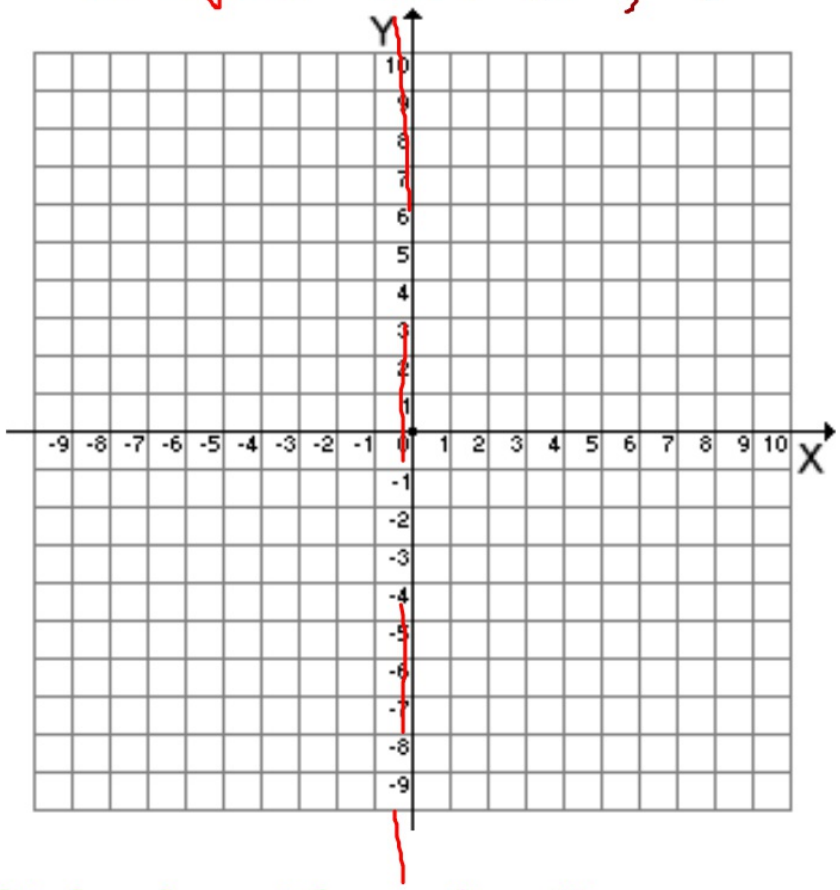
$\log_2 x$

D: $x > 0$
R: all Real #
X-int: (1, 0)
Vertical asymptote at $x = 0$



$ln_{0.5} x$

D: $x > 0$
R: all Real #
V. asym @ $x = 0$ X-int: (1, 0)



IWBAT determine the values for which a logarithmic function increases or decreases, and identify the domain, range, x-intercept, and asymptote.

Vocabulary 3.5.1 p. 15

Practice 3.5.2

Apex quiz 3.5.3

IWBAT determine the values for which a logarithmic function increases or decreases, and identify the domain, range, x-intercept, and asymptote.

Apply the properties of exponents and logarithms to simplify expressions.

Name this property and rewrite the two examples.

Change of base

$$\log_b(a) = \frac{\log_c(a)}{\log_c(b)}$$

$$\log_2(x) = \frac{\log(x)}{\log(2)}$$

$$\log_5(12) = \frac{\log(12)}{\log(5)}$$

IWBAT identify an equivalent logarithmic expression using the change-of-base formula, and evaluate logarithmic expressions. I will capture my thinking using the math note catcher including teacher and student-team modeled example problems on the Promethean board. I will demonstrate my understanding on my exit ticket.

3.6 Properties of Exponents & Logarithms 5/06/14

Multiplication Law of Exponents & Logarithms

$$\log(a * b) = \log(a) + \log(b)$$

$\log(15) =$ $5 \cdot 3$ $\log(5) + \log(3)$

$\log(6) + \log(5) =$ $\log(6 \cdot 5) = \log(30)$

$$a^m * a^n = a^{m+n}$$

$8^6 * 8^5 =$ $8^{11} = 8^{10} \cdot 8^1 = 8^4 \cdot 8^7 =$

$8^{\frac{1}{2}} * 8^{\frac{1}{4}} =$ $\frac{1}{2} \cdot \frac{2}{4}$ $8^{\frac{3}{4}}$

IWBAT identify an equivalent logarithmic expression using the change-of-base formula, and evaluate logarithmic expressions.

3.6 Properties of Exponents & Logarithms

5/06/14

Subtraction Law of Exponents & Logarithms

$$\log(a) - \log(b) = \log\left(\frac{a}{b}\right)$$

$\log(6) - \log(8) =$ $\log\left(\frac{6}{8}\right) = \log\left(\frac{3}{4}\right)$

$\log\left(\frac{11}{17}\right) =$ $\log(11) - \log(17)$

Negative exponent property $a^{-n} = \frac{1}{a^n}$

$$\frac{a^m}{a^n} = a^{m-n}$$

$\frac{4^5}{4^3} =$ 4^2

$\frac{2^3}{2^7} =$ 2^{-4} $\frac{2\cdot2\cdot2}{2\cdot2\cdot2\cdot2\cdot2\cdot2\cdot2} = \frac{1}{2^4}$

IWBAT identify an equivalent logarithmic expression using the change-of-base formula, and evaluate logarithmic expressions.

Power Property of Logarithms

$$\log(a^m) = m\log(a)$$

$\log(7^x) =$ $x \log(7)$

$\log\left(\frac{1}{3}^{2x}\right) =$ $2x \log\left(\frac{1}{3}\right)$

$\log\left(3^{4x}\right) = 4x \log(3)$

IWBAT identify an equivalent logarithmic expression using the change-of-base formula, and evaluate logarithmic expressions.

These are always true if $b > 0$ and $b \neq 1$.

$\log_b 1 = 0$ $\qquad$ $\log_b b = 1$

$b^0 = 1$ $\qquad$ $b^1 = b$

IWBAT identify an equivalent logarithmic expression using the change-of-base formula, and evaluate logarithmic expressions.

3.6 Properties of Exponents & Logarithms 5/06/14

Vocabulary 3.6.1 p. 21

Practice 3.6.2

Apex quizzes 3.6.3, 3.6.4, & 3.6.5

IWBAT identify an equivalent logarithmic expression using the change-of-base formula, and evaluate logarithmic expressions.

3.7 Solving Exponential Equations 5/07/14

Apply the properties of exponents and logarithms to simplify expressions.

Simplify without using a calculator.

$\log(7) + \log(6)$ $= \log(7 \cdot 6) = \log(42)$

$\log(12) - \log(9)$ $= \log\left(\frac{12}{9}\right) = \log\left(\frac{4}{3}\right)$

Are these equivalent? If not, change the right-hand side to make them equivalent.

$4^5 * 4^7 = 4^{35}$ 4^{12}

CoB

$\log_4(12) = \log(4) * \log(12)$ $\frac{\log(12)}{\log(4)}$

IWBAT use properties of exponents and logarithms to solve exponential equations. I will capture my thinking using the math note catcher including teacher and student-team modeled example problems on the Promethean board. I will demonstrate my understanding on my exit ticket.

3.7 Solving Exponential Equations

5/07/14

Use properties of exponents and logarithms to solve exponential equations.

power property

$\ln(e^x) = \ln(12)$

$x \ln(e) = \ln(12)$

$x = \ln(12)$

$\log(10^x) = \log(35)$

$x \log(10) = \log(35)$

$x = \log(35)$

$\log(27^x) = \log(155)$

$x \log(27) = \log(155)$

$\frac{x \log(27)}{\log(27)} = \frac{\log(155)}{\log(27)}$

$x = \frac{\log(155)}{\log(27)}$

$\ln(e^x) = \ln(178)$

$x \ln(e) = \ln(178)$

$x = \ln(178)$

IWBAT use properties of exponents and logarithms to solve exponential equations.

3.7 Solving Exponential Equations

5/07/14

Use properties of exponents and logarithms to solve exponential equations.

$$\frac{4 * 3^x}{4} = \frac{2.62}{4}$$

$\log(3^x) = \log\left(\frac{2.62}{4}\right)$

$x \frac{\log(3)}{\log(3)} = \frac{\log\left(\frac{2.62}{4}\right)}{\log(3)}$

$x = -0.385$

$$\frac{6 * e^x}{6} = \frac{12.36}{6}$$

$\ln(e^x) = \ln(2.06)$

$x \ln(e) = \ln(2.06)$

$x = 0.72$

$\ln(e^{3x}) = \ln(162754.79)$

$\frac{3x \ln(e)}{3} = \frac{\ln(162754.79)}{3}$

$x = 4$

$\log(2^{5x}) = \log(1024)$

$\frac{5x \log(2)}{5 \log(2)} = \frac{\log(1024)}{5 \log(2)}$

$x = 2$

IWBAT use properties of exponents and logarithms to solve exponential equations.

Vocabulary 3.7.1 p. 15

Practice 3.7.2

Apex quizzes 3.7.3

IWBAT use properties of exponents and logarithms to solve exponential equations.

3.8 Solving Logarithmic Equations

5/08/14

Rewrite a logarithmic equation into an equivalent exponential equation.

$e^x = 12$

Power Property

$x\ln(e) = \ln(12)$

$x = \ln(12)$

$10^x = 35$

$x\log(10) = \log(35)$

$x = \log(35)$

$e^x = 178$

$x\ln(e) = \ln(178)$

$x = \ln(178)$

$27^x = 155$

$x\log(27) = \log(155)$

$\frac{x\log(27)}{\log(27)} = \frac{\log(155)}{\log(27)}$

$x = \frac{\log 155}{\log 27}$

IWBAT use properties of exponents and logarithms to solve logarithmic equations, and rewrite an equation that includes a natural log into an equivalent exponential equation. I will capture my thinking using the math note catcher including teacher and student-team modeled example problems on the Promethean board. I will demonstrate my understanding on my exit ticket.

3.8 Solving Logarithmic Equations

5/08/14

$x^2 \cdot x^3 = x^5$

$x \cdot x \cdot x \cdot x \cdot x$

Use properties of exponents and logarithms to solve exponential equations.

$$\log\left(\frac{x}{17}\right) = 5$$

$\log(x) - \log(17) = 5$

$+\log(17) \quad +\log(17)$

$\log(x) = 5 + \log(17)$

$10^{\log(x)} = 10^{5+\log(17)}$

$x = 10^5 \cdot 10^{\log(17)}$

$x = 100{,}000 \cdot 17$

$x = 1{,}700{,}000$

$$\log(17x) = 5$$

$\log(17) + \log(x) = 5$

$-\log(17) \quad -\log(17)$

$\log(x) = 5 - \log(17)$

$10^{\log(x)} = 10^{5-\log(17)}$

$$x = \frac{10^5}{10^{\log(17)}}$$

$$x = \frac{100{,}000}{17}$$

$x = 5882.35$

IWBAT use properties of exponents and logarithms to solve logarithmic equations, and rewrite an equation that includes a natural log into an equivalent exponential equation.

3.8 Solving Logarithmic Equations

5/08/14

Use properties of exponents and logarithms to solve exponential equations.

$$\log\left(\frac{x}{6}\right) = 7$$

$\log(x) - \log(6) = 7$

$+\log(6) \quad +\log(6)$

$\log(x) = 7 + \log(6)$

$10^{\log(x)} = 10^{7+\log(6)}$

$X = 10^{7} \cdot 10^{\log(6)}$

$X = 10{,}000{,}000 \cdot 6$

$X = 60{,}000{,}000$

$$\log(6x) = 2.5$$

$\log(6) + \log(x) = 2.5$

$-\log(6) \quad -\log(6)$

$\log(x) = 2.5 - \log(6)$

$10^{\log(x)} = 10^{2.5-\log(6)}$

$$X = \frac{10^{2.5}}{10^{\log(6)}} = \frac{10^{2.5}}{6}$$

$X = 52.70$

IWBAT use properties of exponents and logarithms to solve logarithmic equations, and rewrite an equation that includes a natural log into an equivalent exponential equation.

3.8 Solving Logarithmic Equations

5/08/14

Rewrite an equation that includes a natural log into an equivalent exponential equation.

$ln(5) = x$

$e^x = 5$

$5 \cdot \frac{1}{5} ln(6) = x \cdot 5$

$ln(6) = 5x$

$e^{5x} = 6$

IWBAT use properties of exponents and logarithms to solve logarithmic equations, and rewrite an equation that includes a natural log into an equivalent exponential equation.

3.8 Solving Logarithmic Equations

5/08/14

Vocabulary 3.8.1 p. 15

Practice 3.8.2

Apex quizzes 3.8.3

IWBAT use properties of exponents and logarithms to solve logarithmic equations, and rewrite an equation that includes a natural log into an equivalent exponential equation.

3.9 Exponents, Logarithms, and Their Graphs 5/09/14

Use properties of exponents and logarithms to solve logarithmic equations.

Complete the Unit 3 test: 3.9.2.